

HIGH VOLTAGE OFFSET DETECTION CIRCUIT

ABSTRACT OF THE DISCLOSURE

A high voltage offset detection circuit registers the voltage at the midpoint of a switching half-bridge to determine when the midpoint voltage reaches a given value to avoid hard-switching in the half-bridge switches. The midpoint voltage of the switching half-bridge is applied through a buffer to a MOSFET that is current limited to produce a voltage that reflects the voltage of the midpoint of the switching half-bridge. The voltage produced by the MOSFET may be supplied to a comparator with a threshold input to obtain a signal that indicates when the switches of the switching half-bridge may be turned on to avoid hard-switching. The MOSFET may be selectively enabled to detect the voltage. The buffer operates to prevent voltages being applied to the MOSFET lower than a low side return voltage to prevent shorts in the IC between the low side supply voltage and low side return. The offset detection circuit may be completely implemented on a monolithic integrated circuit with a switching half-bridge driver, or may be a separate circuit coupled to the half-bridge and external to the half-bridge driver.